

Teledyne RD Instruments

# RiverRay ADCP

Intelligent River Discharge System

## A Revolution in Discharge Measurement

Go straight to work collecting highly accurate stream and river discharge data with the RIVERRAY ADCP (Acoustic Doppler Current Profiler). This economical turnkey system comes complete with: the RiverRay ADCP, a custom-designed boat, user-friendly software, and convenient wireless communication—everything you need to begin making precision river discharge measurements.

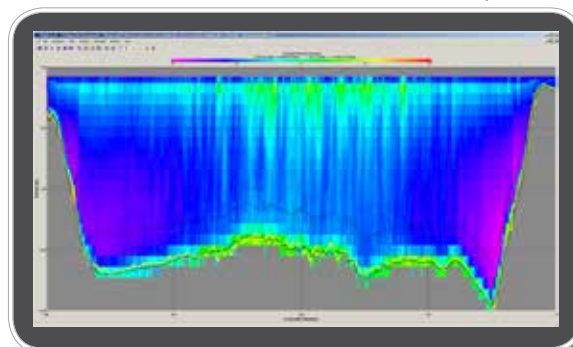
With over thirty years experience delivering acoustic Doppler products, Teledyne RDI's RiverRay is the culmination of years of technology advances and invaluable customer feedback.

From a shallow stream to a raging river, the revolutionary RiverRay delivers the simplicity and reliability your operations require, at a price that won't break your budget.

The RiverRay ADCP utilizes a flat surface 4-beam phased-array transducer. A dedicated fifth beam is used to measure depth.



Sample data.



### PRODUCT FEATURES

- **Ease of use:** Easy to carry, easy to deploy, and easy to operate; just power and go.
- **Intelligent:** Automatic adaptive sampling based on flow conditions continuously optimizes your discharge measurement from bank to bank, thus ensuring the highest quality data without your intervention.
- **Flat transducer:** The sleek phased array transducer design provides reduced size, weight, and flow disturbance.
- **Versatile:** A single instrument can deliver high quality data in environments ranging from a 0.4m stream to a 60m deep river.
- **Superior surface measurements:** Interwoven independent and short range measurements improve the discharge computation in your critical surface layer.
- **Platform stability:** RiverRay's float boasts reduced drag, causes less flow disturbance, and provides superior handling—even in high water velocities and rough surface.
- **No cables required:** Data is wirelessly transmitted to your shore station via Bluetooth™ technology.
- **DGPS compatible:** Integrate an external DGPS for difficult conditions, such as moving beds.



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Intelligent River Discharge Measurement

## TECHNICAL SPECIFICATIONS

<b>Water Velocity Profiling</b>	Operation mode	Broadband or pulse-coherent, automatic		
	Velocity range	±5m/s default, ±20m/s max.		
	Profiling range	0.4m <sup>1</sup> to 60m <sup>2</sup>		
	Accuracy	±0.25% of water velocity relative to ADCP, ±2mm/s		
	Resolution	1mm/s		
	Number of cells	25 typical, 200 max. (automatic selection)		
	Cell size:	10cm min. (automatic selection)		
Surface cell range	25cm <sup>3</sup>			
Data output rate	1-2Hz (typical)			
<b>Bottom Tracking</b>	Operation mode	Broadband		
	Velocity range	±9m/s		
	Depth range	0.4m to 100m <sup>2</sup>		
	Accuracy	±0.25% of bottom velocity relative to ADCP, ±2mm/s		
	Resolution	1mm/s		
<b>Depth Measurement</b>	Range	0.3m to 100m <sup>2</sup>		
	Accuracy	±1% (with uniform water temperature and salinity profile)		
	Resolution	1mm <sup>4</sup>		
<b>Vertical Beam</b>	Range	0.2m to 80m		
	Accuracy	±1% (with uniform water temperature and salinity profile)		
	Resolution	1mm		
<b>Standard Sensors</b>	Range	Temperature	Tilt (pitch and roll)	Compass
	Accuracy	-5°C to 45°C	±90°	0-360°
	Resolution	±0.4°C	±0.3°	±2° <sup>5</sup>
		0.01°C	0.02°	0.01°
<b>Transducer and Hardware</b>	System frequency	600kHz		
	Configuration	Phased array (flat surface), Janus four beams at 30° beam angle		
	Internal memory	16MB		
<b>Communications</b>	Standard	RS-232, 1200 to 115,200 baud. Bluetooth, 115,200 baud, 200m range.		
	Optional	Radio modem, range >30km (line of sight)		
<b>Software (included)</b>	<ul style="list-style-type: none"> <li>• WinRiver II (standard) for moving-boat measurement</li> <li>• SxS Pro (optional) for stationary measurement; comes with an uncertainty model for in situ quality evaluation and control</li> </ul>			
<b>Power</b>	Input voltage	10.5-18V DC		
	Power consumption	1.5W typical		
	Battery (inside float)	12V, 7A-hr lead acid gel cell (rechargeable)		
	Battery capacity	>40 hrs continuous operation		
<b>Float (included)</b>	Configuration	Three hulls (trimaran)		
	Material	Polyethylene		
	Dimensions	Length 120cm, width 80cm, height 18cm		
	Weight	10kg bare; 17kg with instrument and battery		
<b>GPS Integration (optional)</b>	Integration with GPS (customer supplied) through RS-232 to RR data stream			
<b>Environmental</b>	Operating temperature	-5°C to 45°C		
	Storage temperature	-20°C to 50°C		

- 1 Assumes one good cell (10cm); range measured from the transducer surface.
- 2 Assume fresh water; actual range depends on temperature and suspended solids concentration.
- 3 Distance measured from the center of the first cell to the transducer surface.
- 4 For averaged depth data.
- 5 For combined tilt <math>\pm 70^\circ</math> and dip angle <math>< 70^\circ</math>.